HIGH SCHOOL

Math Shifts

FRONT PAGE

New standards are triggering three major changes in instruction:

1. Teachers will focus on the most important topics for each grade level allowing your child to develop a deeper understanding of mathematical ideas and skills.

2. Teachers will provide more opportunities for students to make connections between the mathematics they learn from grade to grade.

3. Students will still be expected to know their "math facts" and solve problems efficiently. Along with those expectations, learning experiences will help students to understand why those strategies and skills work and how to apply them to solve problems that arise from everyday life experiences and other real-world situations.

SUPPORT YOUR CHILD AT HOME

Support your child during homework … but DON'T do it for them. If your child is having difficulty with a problem, here are some questions to ask:

- What do you know? What are you sure about? What do you need to find out?
- What would happen if …?
- What have you tried so far? If that didn't work, what would be another way to start?

Talk to your child about how adults use math in their everyday lives: deciding on which is the "better buy" while shopping, estimating what time to start a series of tasks in order to be done by a certain time, or figuring out how many burgers you can buy if you have $10.

Teach your child that success is a result of effort rather than raw talent. Encourage your child to keep going and not give up when they are faced with a challenging problem. Teach your child that setbacks or failures are actually opportunities for improvement.

Use technology to help build your child's interest in math. Do an internet search for "free math games" and play a few games with your child.

Sample exercises

See back for answers and explanations.

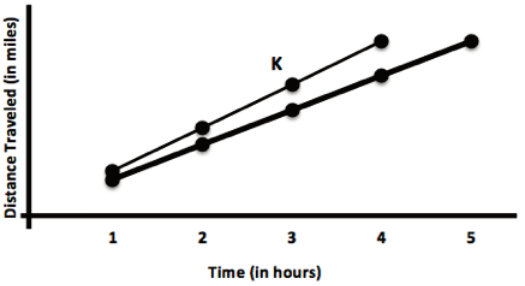
Instead of being asked to simply memorize formulas, students will use mathematics to ***make sense of and explain real-world situations.***

1.

Previous math question: Solve the equation: $5x = 112$

Hawaii Common Core math question:

Lance and Lee are competing in the IRONMAN Triathlon. Both of them started the 112-mile bicycle portion of the race at the same time. Lance completed the bicycle ride in 5 hours. Lee took 4 hours to complete the ride.



a. Identify which graph represents Lance and which represents Lee. Explain how you used the information in the graphs to help you arrive at your decision.

b. Determine the coordinates of point K and explain what the coordinates mean for this situation.

2.

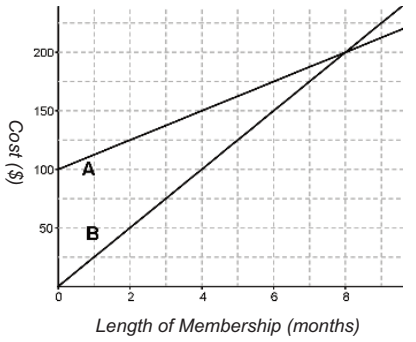
Previous math question:

A membership at Imua Gym includes a one-time fee of $100 to join plus $30 per month.

a. Create a function that represents the total amount someone would pay for a membership at Imua Gym based on the number of months someone is a member. **b.** Use your function to determine the total amount someone would pay for maintaining a membership at Imua Gym for 1 year.

Hawaii Common Core math question:

Graph: Cost of a membership at two different gyms as a function of the length of the membership.



a. What is the initial fee that each gym charges to join? **b.** Identify the point of intersection of the 2 graphlines and explain what the coordinates of this point represent. **c.** Assuming both gyms are of equal quality and provide the same equipment and services, which gym membership is the "better buy?" Explain. **d.** Which gym charges a higher monthly rate for membership? How can you tell?

Preparing your child for tomorrow's world…

To better prepare children for the higher demands of college and careers, public schools are improving education with the Hawaii Common Core – learning goals to help all children stay on track to graduate with the skills they need to be successful. Please ask your child's teacher for more information, or visit **bit.ly/CommonCoreHI**.

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BACK PAGE

Answer key

1. *Previous math question:*

Solve the equation: $5x = 112$ ... $\frac{5x}{5} = \frac{112}{5}$ ... $1x = 22.4$ so $x = 22.4$

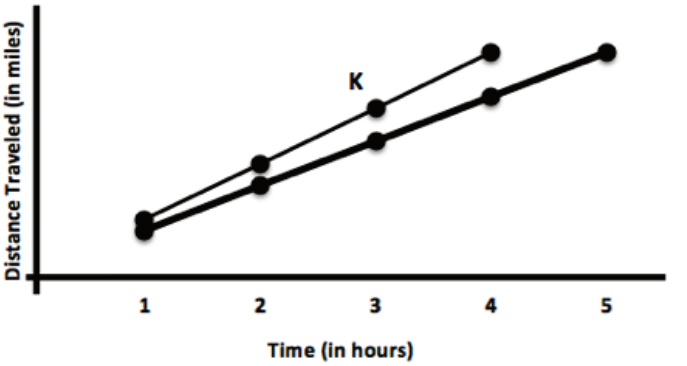
Hawaii Common Core math question:

Question A.

Identify which graph represents Lance and which represents Lee. Explain how you used the information in the graphs to help you arrive at your decision.

The purpose is to ask students to interpret information from a graph and make sense of it in the given situation. There are a few different ways students can answer (either of the following would be acceptable):

- Since Lee finished before Lance, he was riding his bike at a faster speed (rate) than Lance. Since his speed was faster, the graph of his line will be steeper, so the top line must be the graph for Lee and the bottom line must be the graph for Lance.



- Since Lee finished in 4 hours, the graph that stops at 4 hours (the top graph) must represent Lee. And therefore, the graph that stops at 5 hours (the bottom graph) must represent Lance.

Question B.

Determine the coordinates of point K and explain what the coordinates mean for this situation. The coordinates of point K will be (3, __). Since point K is on Lee's graph, I need to figure out how fast (the average speed/rate) he was going and use that to find the y-coordinate of point K.

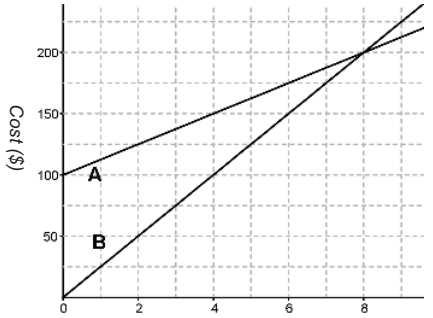
- Since it took him 4 hours to travel 112 miles, I can find his average speed/rate by solving the following equation ("r" stands for rate): $4r = 112$ ... $r = 28$. *This means that for the bike ride, his average speed was 28 miles per hour.*
- To find the y-coordinate of point K: $y = 28x$ ... $y = 28(3)$ ... $y = 84$
- Therefore, the coordinates of point K: (3, 84). And, in this situation, *this means that for the bicycle portion of the race, at 3 hours he traveled a distance of 84 miles.*

2. *Previous math question:*

a. $T = 30m + 100$ (T represents the total cost after belonging for m months)

b. To determine the total cost for 1 year, use $m = 12$ in your function ... $T = 30(12) + 100$ ... $T = \$460$

Hawaii Common Core math question:



Length of Membership (months)

a. What is the initial fee that each gym charges to join?

The graph of Gym A begins (has a y-intercept) at the point (0, 100). So the fee to join Gym A is $100. The graph of Gym B begins at the point (0, 0), which means that Gym B does not charge a fee to join.

b. Identify the point of intersection of the two graphlines and explain what the coordinates of this point represent.

The graphs intersect at (8, 200). This means that for both gyms, at 8 months you will have paid the same total amount ($200) for membership.

c. Assuming both gyms are of equal quality and provide the same equipment and services, which gym membership is the "better buy?" Explain.

If you plan to be a member for less than 8 months, then the total cost for Gym B would be less. If you plan to be a member for more than 8 months, then the total cost for Gym A would be less.

d. Which gym charges a higher monthly rate for membership? How can you tell?

Gym B charges a higher monthly rate for membership. You can tell just by looking at the graph. Since the graph for Gym B is steeper, it has a greater slope which means it has a higher monthly rate.